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| EXAMINER |
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BIAGINI, CHRISTOPHER D

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| ART UNIT | PAPER NUMBER |
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2142

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09/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/784,111

Applicant(s)

KAMEDA, MASAMI

Examiner

Christopher D. Biagini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8,10-14 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,10-14 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1, 3-8, 10-14, and 16 have been considered but are moot in view of the new ground(s) of rejection.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: lack of antecedent basis for "in response to information that identifies a particular block from said first controller *via the SAN*" (emphasis added) and "wherein the SAN couples the first controller and the second controller to establish a...path for the transfer using the file transfer protocol with the LAN."

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-8, 10-14, and 16 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application

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was filed, had possession of the claimed invention. It is noted that Applicant has not pointed out where the amended claims are supported.

Regarding claim 1, the limitation "in response to information that identifies a particular block from said first controller *via the SAN*" (emphasis added) is not supported in the specification. On page 13 of the specification as filed, it is described that "[t]he disk controller 211 sends success/failure information...to a file management unit 209 in a server 207," but it is not specified how this notification occurs. Furthermore, it is unclear how the communication could occur over the SAN if the system is designed to function after a failure in the SAN, as described on page 13.

Additionally, the limitation "wherein the SAN couples the first controller and the second controller to establish a...path for the transfer using the file transfer protocol with the LAN" is not supported in the specification. On page 14 of the specification, it is described that "[t]he file is read from a volume 312 via a disk controller 311 of storage system 310," but does not describe how this read occurs. Again, it is unclear how the communication could occur over the SAN if the system is designed to function after a failure in the SAN, as described on page 13.

The Examiner notes that Figure 3 shows communications occurring between the first controller and the second controller (that is, disk controller 311 and a controller component of server 307). However, this figure is insufficient to show that information identifying a particular block occurs over the SAN, and that the SAN couples the first controller and the second controller to establish a path for transfer using a file transfer

protocol. The arrows in the figure, which presumably indicate data transfer, appear to terminate at each point in the transfer. Notably, however, no arrow terminates at SAN 306. In light of this ambiguity, and without adequate clarification in the specification, the figure cannot be construed to show that information identifying a particular block occurs over the SAN, and that the SAN couples the first controller and the second controller to establish a path for transfer using a file transfer protocol.

Claims 6, 10, and 16 recite features that are similar to the features recited in claim 1 and are rejected for at least the same reasons.

Claims 3-5, 7, 8, and 11-14 are rejected at least for incorporating the deficiencies of parent claims upon which they depend.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 10, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis (US PG PUB 2002/0083120) in view of Bessire (US PG PUB 2003/0097607).

As to claim 1, Soltis shows a computer system for transferring data from a first storage unit (Nasan client 142: see Fig. 11) to a second storage unit (NAS server 106) via a network, said computer system comprising:

- a first controller (Nasan file system 322) provided in the first storage unit, which transfers data stored in said first storage unit, to said second storage unit using a block transfer protocol (see [0147] and note that Nasan layer 322 can "service the [write] request using the SAN write data-path 326," and that the SANs make use of a block-level protocol, as described in [0052]);
- a storage area network (SAN) through which the transfer of data using the block transfer protocol is performed (SAN 128);
- a table which associates a file composed of a plurality of blocks of data with blocks of data constituting the file (comprising an allocation table: see Fig. 6 and [0010]-[0012]); and
- a second controller (remote file system 156), which, in response to information that identifies a particular block from said first controller, identifies a file corresponding to the particular block using said table and transfers the identified file to said second storage unit via a local area network (LAN 104) using a file transfer protocol (see [0152] and note that the NAS data-path 148 makes use of a file-level protocol, as described in [0029]).

Soltis further shows a path for the transfer using the block transfer protocol and another path for the transfer using the file transfer protocol with the LAN (see Fig. 11). Additionally, note that Nasan file system 322 necessarily sends remote file system 156

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“information that identifies a particular block,” since any information that specifies a file for transfer also identifies a corresponding block. Similarly, in order to transfer the file, remote file system 156 must use the allocation table to identify it.

Soltis does not show identifying a particular block via the SAN, and wherein said SAN couples the first controller and the second controller to establish the paths.

A person of ordinary skill in the art, upon reading the Soltis reference, would recognize the desirability of improved methods of connecting the controllers. Bessire shows that a first controller and a second controller may communicate over a network (see [0030]), and Soltis shows a finite number of networks (LAN 104 and SAN 128). Thus, it would have been obvious to one of ordinary skill in the art to try connecting the controllers over the various networks, as a person with ordinary skill has good reason to pursue the known options within his or her technical grasp. In turn, because the connection over the SAN as claimed has the properties predicted by the prior art, it would have been obvious to modify the system of Soltis such that the first and second controllers communicate over the SAN.

Note that such an arrangement would cause the first controller to identify the block via the SAN, and cause the SAN to couple the first controller and the second controller to establish a path for the transfer using the block transfer protocol and another path for the transfer using the file transfer protocol with the LAN.

Claims 6, 10, and 16 recite features that are similar to the features recited in claim 1 and are rejected for at least the same reasons.

As to claim 14, Soltis in view of Bessire shows the limitations of claim 10 as applied above, and Soltis further shows wherein said computer system notifies information identifying a block address to said first controller to request to transfer data on a block basis. Note that write requests from application programs 150 necessarily send remote file system 156 "information identifying a block," since any information that specifies a file for transfer also identifies a corresponding block. See [0147].

Claims 3-5, 7, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis (US PG PUB 2002/0083120) in view of Bessire (US PG PUB 2003/0097607), and further in view of Ayres (US Pat. No. 7,134,040).

As to claim 3, the combination of Soltis and Bessire shows the limitations of claim 1 as applied above, and further shows said first controller notifying information identifying a particular block to said second controller based on "numerous factors" (see [0147]), but does not show that one of those factors is the detection of a transfer failure.

Ayres shows notifying a controller (comprising an available adapter 12a or 12b) of information identifying a particular block (comprising a current device position) based on the detection of a transfer failure (see col. 6, line 23 to col. 7, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with the notification of information taught

by Ayres in order to automatically choose an available path to a storage device when the initial path fails (see col. 1, lines 53-61).

As to claim 4, the combination of Soltis, Bessire, and Ayres shows the limitations of claim 3 as applied above, and further shows wherein the identified file includes data of blocks other than the block related to the transfer failure (see Soltis, [0010], which described that files typically contain multiple data blocks).

As to claim 5, the combination of Soltis, Bessire, and Ayres shows the limitations of claim 4 as applied above, and further shows wherein the data of blocks other than the block related to the transfer failure is data that has been transferred by said first controller via the SAN using the block transfer protocol (note that, as taught by Ayres, the failure may occur after data has already been transferred: see col. 6, lines 23-28).

As to claim 7, the combination of Soltis, Bessire, and Ayres shows the limitations of claim 6 as applied above, but does not show wherein, when the transfer on a file basis fails, said second controller identifies a plurality of second blocks related to the transfer-failed file and instructs said first controller to transfer data of the plurality of second blocks.

Ayres shows when a transfer fails, a controller (device driver 8) identifies a plurality of blocks (comprising the block remaining to be transferred) related to the transfer-failed file and instructs a second controller (comprising an available adapter

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12a or 12b) to transfer data of the plurality of blocks (see col. 6, line 23 to col. 7, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with the notification of information taught by Ayres in order to automatically choose an available path to a storage device when the initial path fails (see col. 1, lines 53-61).

As to claim 13, the combination of Soltis, Bessire, and Ayres shows the limitations of claim 10 as applied above, and further shows said first controller notifying information identifying a block address to said second controller via the SAN based on "numerous factors" (see [0147]), but does not show that one of those factors is the detection of a transfer failure.

Ayres shows notifying a controller (comprising an available adapter 12a or 12b) of information identifying a block address (comprising a current device position) based on the detection of a transfer failure (see col. 6, line 23 to col. 7, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with the notification of information taught by Ayres in order to automatically choose an available path to a storage device when the initial path fails (see col. 1, lines 53-61).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis (US PG PUB 2002/0083120) in view of Bessire (US PG PUB 2003/0097607) and Ayres (US

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Pat. No. 7,134,040), and further in view of Duncan et al. (US PG PUB 2004/0098637, hereinafter "Duncan").

The combination of Soltis, Bessire, and Ayres shows the limitations of claim 7 as applied above, but does not show wherein said first storage unit comprises a main volume and a sub volume that store the same contents of data and wherein, when a transfer of data, stored on said sub volume, on a block basis fails, said first controller notifies information identifying the block of transfer-failed data to said second controller and, in response to an instruction to transfer data of a plurality of blocks related to the transfer-failed file from said second controller, transfers data corresponding to the plurality of blocks, stored on said main volume, on a block basis.

Ayres shows notifying information identifying blocks of transfer-failed data (comprising a current device position) and instructing a controller to transfer data corresponding to the plurality of blocks (comprising an available adapter 12a or 12b). See col. 6, line 23 to col. 7, line 10.

Duncan shows a first storage unit (storage device 130) comprising a main volume (secondary storage system 118) and a sub volume (primary storage system 108) that store the same contents of data (see [0021]). Duncan further shows wherein transfer of data stored on said sub-volume fails, transferring data stored on said main volume (see [0025]).

It would have been obvious to further modify the system of Soltis in view of Ayres with the notifying and instructing taught by Ayres in order to identify data which needs to be transferred. It would have been obvious to further modify the system of Soltis in view

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of Bessire and Ayres with the failure handling of Duncan in order to provide volume failover from one array to another in a manner transparent to a host operating system (see Duncan, [0006]).

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis (US PG PUB 2002/0083120) in view of Bessire (US PG PUB 2003/0097607), and further in view of Tzelnic (US Pat. No. 5,948,062).

As to claim 11, Soltis in view of Bessire shows the limitations of claim 10 as applied above, but does not show wherein said second controller transfers a management table, which associates the information identifying block addresses with a file identifier, to said other computer when data is transferred on a file basis.

Tzelnic shows transferring a management table which associates information identifying block addresses with file identifiers (see col. 11, lines 1-5 and col. 12, lines 12-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with the management table transfer taught by Tzelnic in order to maintain consistency between storage devices (see Tzelnic, col. 11, lines 6-8).

As to claim 12, Soltis in view of Bessire shows the limitations of claim 10 as applied above, but does not show wherein the information identifying a block address is a logical block address.

Tzelnic shows logical block addresses (see col. 12, lines 12-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with logical block addresses as taught by Tzelnic in order to provide a layer of abstraction between the addresses applications use to access data and the physical location of blocks on disk.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D. Biagini whose telephone number is (571) 272-9743. The examiner can normally be reached on M-R 7:30-5, 7:30-4 alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on (571) 272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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ANDREW CALDWELL
SUPERVISORY PATENT EXAMINER

September 11, 2007